

Infrascope: Full-Spectrum Phonocardiography with Automated Signal Analysis

Completed Technology Project (2014 - 2015)



Project Introduction

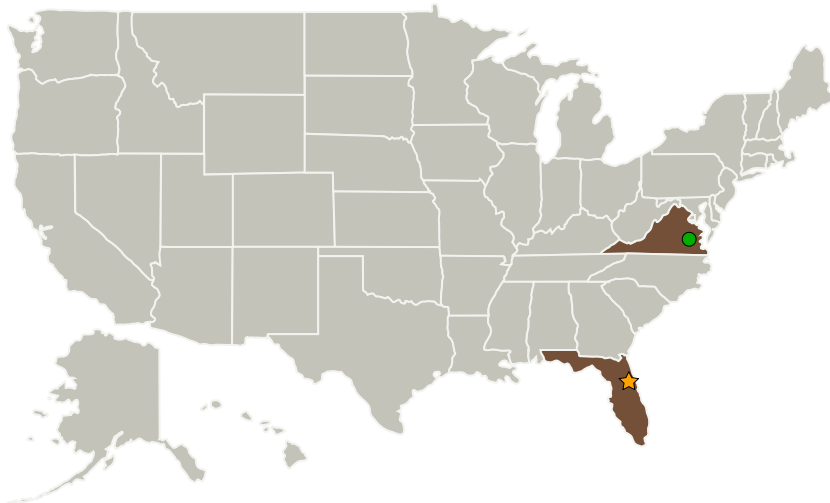
Langley Research Center (LaRC) has developed a low frequency acoustic sensor capable of sensing frequencies below the human range of hearing primarily for aeronautical applications. The Kennedy Space Center (KSC) Biomedical Engineering and Research Lab is partnering with LaRC to explore medical applications of this device initially as a low frequency stethoscope. We will compare the output of the Infrascope to more traditional methods like EKG signals and Real-Time Blood Pressure to try and draw basic correlations and begin to interpret the output of the Infrascope.

Using digital signal analysis tools, we will generate a repeatable output from the infrascope and compare it to the output of a traditional electrocardiogram, and real time blood pressure. We will compare the signals to determine what known information is present in the output of the infrascope, what possible additional information may be present, and attempt to automate the analysis of the Infrascope signal.

Anticipated Benefits

Improved light weight, non-invasive diagnostic tools for human spaceflight missions.

Primary U.S. Work Locations and Key Partners



Infrascope

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Center Innovation Fund: KSC CIF

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Organizations Performing Work	Role	Type	Location
★ Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
InoMedic Health Applications, Inc.	Supporting Organization	Industry Small Disadvantaged Business (SDB), Veteran-Owned Small Business (VOSB)	
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Project Management

Program Director:

Michael R Lapointe

Program Manager:

Barbara L Brown

Project Manager:

David R Bush

Principal Investigator:

David R Bush

Co-Investigator:

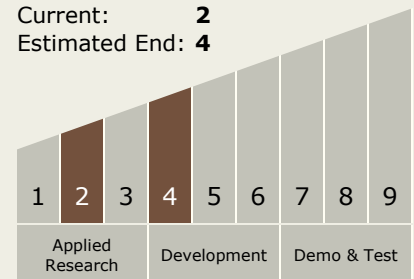
Daniel Woodard

Technology Maturity (TRL)

Start: 2

Current: 2

Estimated End: 4



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - TX06.3 Human Health and Performance

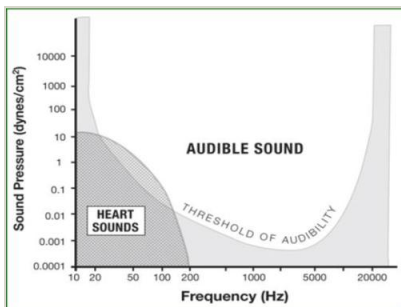
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Primary U.S. Work Locations

Florida

Virginia

Images



Infrascope Frequency Chart

Additional acoustic information made available via infrascope (<https://techport.nasa.gov/image/3285>)



Infrascope Picture

Infrascope (<https://techport.nasa.gov/image/3284>)

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Technology Areas (cont.)

- └ TX06.3.3 Behavioral Health and Performance